In the claims:

1. (original) A method for performing a domain transformation of a digital signal from the time domain into the frequency domain and vice versa, the method comprising:

performing the transformation by a transforming element comprising a plurality of lifting stages, wherein the transformation corresponds to a transformation matrix and wherein at least one lifting stage of the plurality of lifting stages comprises at least one auxiliary transformation matrix and a rounding unit, the auxiliary transformation matrix comprising the transformation matrix itself or the corresponding transformation matrix of lower dimension; and

performing a rounding operation of the signal by the rounding unit after the transformation by the auxiliary transformation matrix.

2. (original) The method of claim 1, wherein the transformation is a DCT-I transformation, DCT-IV transformation, DST-I transformation, DFT-I transformation, a DFT-IV transformation, DST-IV transformation, DWT-I transformation or DWT-IV transformation.

3. (currently amended) The method of claim 1~~ or 2,~~ wherein each lifting stage corresponds to a lifting matrix, wherein the lifting matrix is a block-triangular matrix comprising four sub-

matrices with two invertible integer matrices as two of the sub-matrices in one diagonal.

4. (original) The method of claim 3, wherein the invertible integer matrices in each lifting matrix are diagonal matrices with components which are either one or minus one.

5. (currently amended) The method of claim~~s~~ 1~~ to 4~~, wherein the transforming element comprises three lifting stages.

6. (currently amended) The method of claim~~s~~ 1~~ to 4~~, wherein the transforming element comprises five lifting stages.

7. (currently amended) The method of claim~~s~~ 1~~ to 4~~, wherein the transforming element comprises eight lifting stages.

8. (currently amended) The method of claim~~s~~ 1~~ to 4~~, wherein an audio signal or a video signal is used as the digital signal.

9. (original) A device for performing a domain transformation of a digital signal from the time domain into the frequency domain and vice versa, the device comprising:

a transformation unit comprising a transforming element for performing the transformation which transforming element comprises a plurality of lifting stages,

wherein the transformation corresponds to a transformation matrix, and wherein each lifting stage comprises at least one auxiliary transformation matrix, which is the transformation matrix itself or the respective transformation matrix of lower dimension and wherein each lifting stage further comprises a rounding unit,

whereby, the signal is processed by the respective rounding unit after the transformation by the respective auxiliary transformation matrix.

10. (original) The device of claim 9, wherein the transformation unit comprises:

a modified discrete cosine transform device coupled to receive the a plurality of data blocks and configured to domain transform each data block into MDCT coefficients;

a quantizer coupled to receive each of the MDCT coefficients, the quantizer operable to produce, in response, quantized MDCT coefficients;

a bit stream encoder coupled to receive the quantized MDCT coefficients, the bit stream producing, in response, a perceptually coded bit stream;

an inverse quantizer coupled to receive the quantized MDCT coefficients, the inverse quantizer operable to restore the MDCT coefficients to an non-quantized state; and

a rounding unit coupled to receive the restored MDCT coefficients and operable to produce integer value MDCT coefficients.

11. (original) The device of claim 10, wherein the transformation unit further comprises:

an inverse modified discrete cosine transform device coupled to receive the data blocks and operable to produce, in response, IntMDCT coefficients;

means for computing the difference between respective IntMDCT coefficients and integer value MDCT coefficients to produce respective residual MDCT coefficients; and

an entropy coder coupled to receive the residual MDCT coefficients and operable to generate, in response, a lossless enhancement bitstream.

12. (original) The device of claim 11, wherein the transformation unit further comprises:

a bitstream decoder coupled to receive the perceptually coded bitstream and operable to output, in response, a decoded bitstream;

an inverse quantizer coupled to receive the decoded bitstream and to produce, in response, restored MDCT coefficients;

a rounding unit coupled to receive the restored MDCT coefficients and operable to round each MDCT coefficient to an integer value; and

an inverse MDCT device coupled to receive the restored MDCT stream, and to produce in generate in response, a reconstructed copy of the perceptually coded signal.

13. (original) The device of claim 12, wherein the transformation unit comprises:

an entropy decoder coupled to receive the lossless bit stream and operable to generate, in response, residual IntMDCT coefficients;

means for adding the residual IntMDCT coefficients to the integer value MDCT coefficients to produce IntMDCT coefficients; and

an inverse IntMDCT device coupled to receive the summation of the integer value MDCT coefficients and the IntMDCT coefficients to produce a reconstructed copy of the losslessly coded audio signal.

14. (original) A computer readable medium having a program recorded thereon, wherein the program is adapted to make a computer perform a method for performing a domain transformation

of a digital signal from the time domain into the frequency domain and vice versa, the computer readable medium comprising:

code for performing the transformation by a transforming element comprising a plurality of lifting stages, wherein the transformation corresponds to a transformation matrix and wherein at least one lifting stage of the plurality of lifting stages comprises at least one auxiliary transformation matrix and a rounding unit, the auxiliary transformation matrix comprising the transformation matrix itself or the corresponding transformation matrix of lower dimension; and

code for performing a rounding operation of the signal by the rounding unit after the transformation by the auxiliary transformation matrix.

15. (new) The method of claim 2 wherein each lifting stage corresponds to a lifting matrix, wherein the lifting matrix is a block-triangular matrix comprising four sub-matrices with two invertible integer matrices as two of the sub-matrices in one diagonal.

16. (new) The method of claim 15, wherein the invertible integer matrices in each lifting matrix are diagonal matrices with components which are either one or minus one.